jacent to the ulcer and throughout the mucosa of the cecum were multiple elevated grayish plaques with innumerable small ulcerations between them.

Microscopic sections through the cecal ulcer showed that the mucosal epithelium terminated rather acutely and was replaced by an ulcer floor consisting of collections of polymorphonuclear leukocytes. The cecal wall was almost completely destroyed. The inflammatory cells extended directly to the serosa. There was no muscularis or mucosal layer. A thin fibrinal purulent exudate came from the serosa. Sections throughout the remainder of the cecal wall showed similar small ulcerations of lesser severity. The pathological diagnosis was ulcerative colitis with gangrene of the cecum.

SUMMARY

A unique case of gangrene of the cecum owing to volvulus, in a patient who had ulcerative colitis, is presented. Bowel resection was necessary. The case draws attention anew to the necessity for careful observation for complications in patients with ulcerative colitis.

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Tuberculosis of the Duodenum

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THE INCIDENCE OF TUBERCULOSIS in all forms has decreased since the advent of drugs specific for the disease, and tuberculosis of the duodenum is now more than ever a rarity. Matthews, Delaney, and Dragstedt[4] cited a report by Paerry and Shaw in 1894 that only 11 cases of duodenal tuberculosis were noted in a review of 17,652 autopsies that had been done at Guys Hospital over the previous 66-year period. They also cited Fenwick and Dodwell who in 1892 reported 500 cases of intestinal tuberculosis in 2,000 autopsies of patients with pulmonary tuberculosis, only 17 of the 500 having duodenal tuberculosis. Also quoted was Gossmann, who in 1913 noted five cases of duodenal tuberculosis in reviewing 2,360 autopsies of patients with tuberculosis. In the same communication in which they cited these reports, Matthews and co-workers added reports of 18 cases of duodenal tuberculosis, making 123 cases that had been reported in the literature up to 1932.

In 1931, Good (cited by Ostrum[6]) reported an incidence of 0.34 per cent of gastric tuberculosis in autopsies and gastric resections at the Mayo Clinic. Reeves[7] reported a case of tuberculosis of the duodenal bulb in 1931. In the Case Records of the Massachusetts General Hospital in 1942, Mallory[3] reported a tuberculous ulcer in the third portion of the duodenum, communicating with a retroperitoneal abscess cavity, associated with miliary tuberculosis. Migliaccio[5] in 1946 reported a case of tuberculosis of the third portion of the duodenum. Two years later Ostrum and Serber[6] reported two cases of duodenal tuberculosis, and in 1954 Anderson, Pontius and Witkowski[1] wrote of a case in the duodenal bulb.

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REPORT OF A CASE

The patient, a 51-year-old Filipino, entered Wadsworth Hospital July 11, 1955, with chief complaints of epigastric pain for one year, with some relief on ingestion of food, and a 6-pound loss of weight in three months. There was one episode of a tarry stool. An upper gastrointestinal radiographic study done elsewhere one year before was said to show a duodenal ulcer. Upon physical examination, mild tenderness in the epigastrium was noted. No abnormalities were noted on examination of the blood and urine, and the serum amylase content was within normal limits.

Upper gastrointestinal radiographic studies were interpreted as showing an ulcerating and apparently infiltrating destructive mucosal lesion of the second portion of the duodenum (Figure 1). This was interpreted as suggestive for carcinoma of the duodenum with other possibilities being carcinoma of the ampulla of Vater or pancreas. A roentgenogram of the chest showed no abnormality.

At operation, July 19, an infiltrating lesion was observed in the descending duodenum. There were large nodes along the portal vein and hilus of the liver. Biopsy specimens were taken from thickened mucosal folds of the second portion of the duodenum and frozen sections were reported as showing possibly lymphosarcoma. A frozen section of a lymph node from the hilus of the liver showed caseous tuberculosis. Subtotal gastrectomy was done. However, pathological study of the surgical specimens (Figures 2 and 3) revealed tuberculous duodenitis with caseation of draining lymph nodes. A pulmonary embolus developed postoperatively and bilateral saphenous and femoral vein ligation was carried out. Pancreatitis also developed, the blood

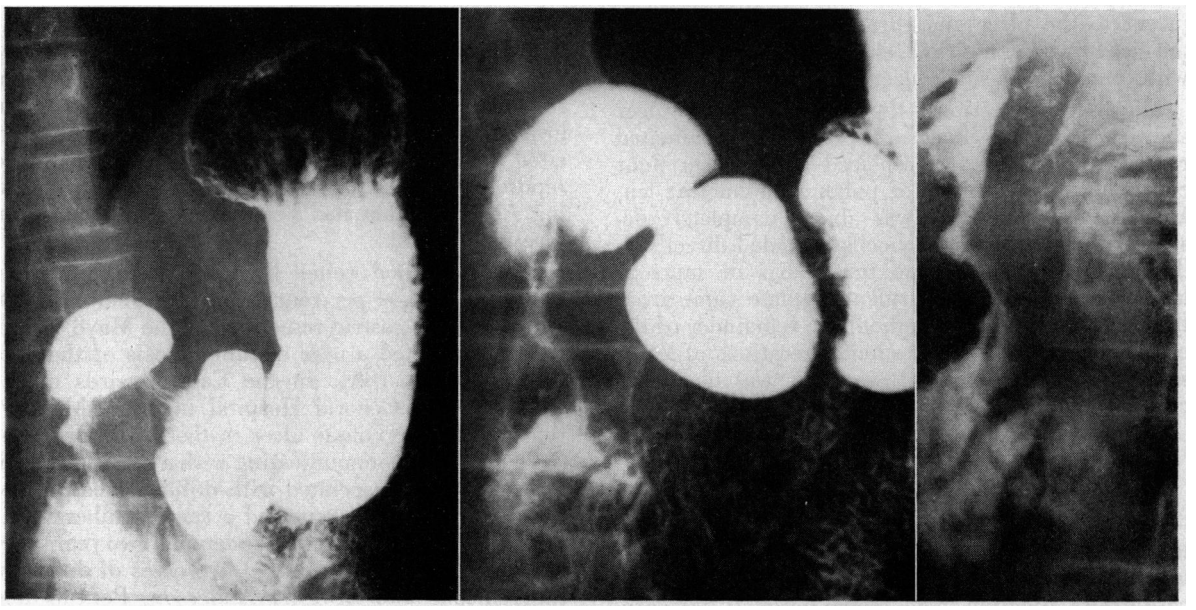

Figure 1.—*Left,* radiograph showing a long narrow infiltrating lesion of the second portion of the duodenum with ulceration. *Center,* spot film of second portion of duodenum, showing destroyed and distorted mucosa. *Right,* spot film of second portion of duodenum, showing ulceration and narrowing.

amylase rising to 18,000 units. The condition of the patient deteriorated rapidly and he died August 2.

At post mortem examination tuberculosis of the second portion of the duodenum was observed, with post-surgical changes and caseous tuberculous lymphadenitis of para-duodenal, gastro-hepatic and porta hepatis nodes. Generalized peritonitis, pulmonary embolism and focal hemorrhagic pancreatitis were also noted.

Symptoms and Physical Findings

The symptoms of duodenal tuberculosis are not specific. Sometimes there are no symptoms, sometimes symptoms are like those of duodenal ulceration, sometimes there are diffuse symptoms referrable to the gastrointestinal tract. There may be hematemesis, melena, loss of weight, pain and fever. Often the disease is associated with either active or arrested pulmonary tuberculosis. In some cases there is primary intestinal involvement.

The physical features usually are not specific or helpful in making a correct diagnosis. Occasionally non-specific epigastric tenderness may be present, and a mass may be palpated.

Pathology

Like intestinal tuberculosis, duodenal tuberculosis can be ulcerative or hyperplastic.

The ulcerative type is most common. Ulcers may be single or multiple. The tubercle bacilli reach the submucosal layer, producing caseation and ulceration into the lumen of the intestinal tract. The tuberculous ulcers may be scalloped, irregular and undermined or elevated. Tubercles are often seen like a string of pearls over the serosa and along the lymphatic chain. Adjacent lymph nodes are often involved. Fistulae, sinus tracts and perforations are common.

The hyperplastic type is characterized by a proliferative thickening of the bowel wall, producing a granulating, polypoid appearance of the mucosa which grossly may be indistinguishable from a neoplastic process. Ulceration is rare in this type.

Microscopically (Figures 2 and 3) characteristic tubercles have epithelioid and giant cells located in swollen follicles, and rarely tubercle bacilli. Miliary or sub-miliary tubercles, isolated or in groups, may be found in the mucosa, submucosa and muscularis, or in the margins of ulceration.

Radiographic Features

In roentgenographic studies the mucosa is usually irregular, involving a long segment, often with polypoid mucosal changes suggesting neoplasm, and may or may not be ulcerated. In some cases involving the duodenal bulb, the deformity is difficult to differentiate from a duodenal ulcer. A delay of passage of barium through the involved area of duodenum, with dilatation both proximal and distal to the lesion, is seen occasionally. Sinus tracts leading from the ulceration can be seen. As the lesion heals, scarring can occur and with it the development of obstruction by stenosis, angulation or retraction of the bowel by adhesive bands.

Operative Observations

In the case herein reported, and in several others previously reported, the lesion as seen at operation closely resembled neoplasm. There were thickened, nodular, proliferative, polypoid mucosal changes

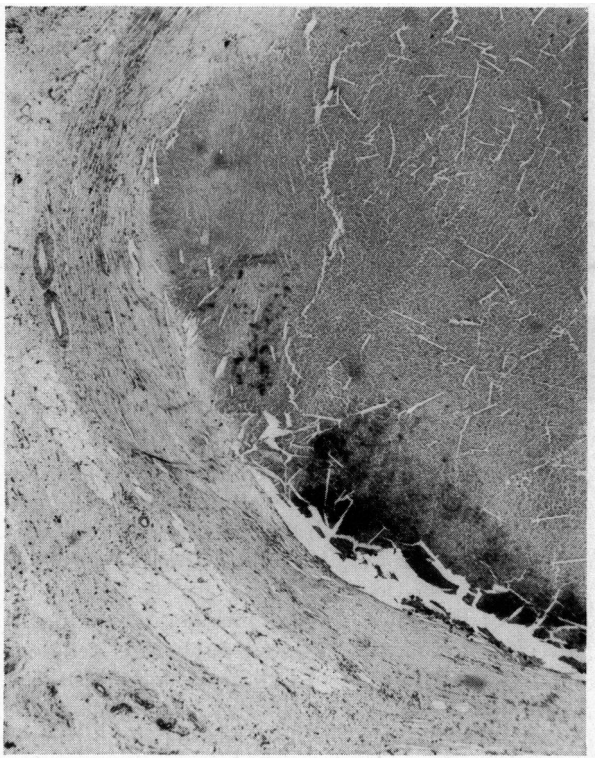

Figure 2.—Microscopic section (×75) showing caseous necrosis in an abdominal lymph node.

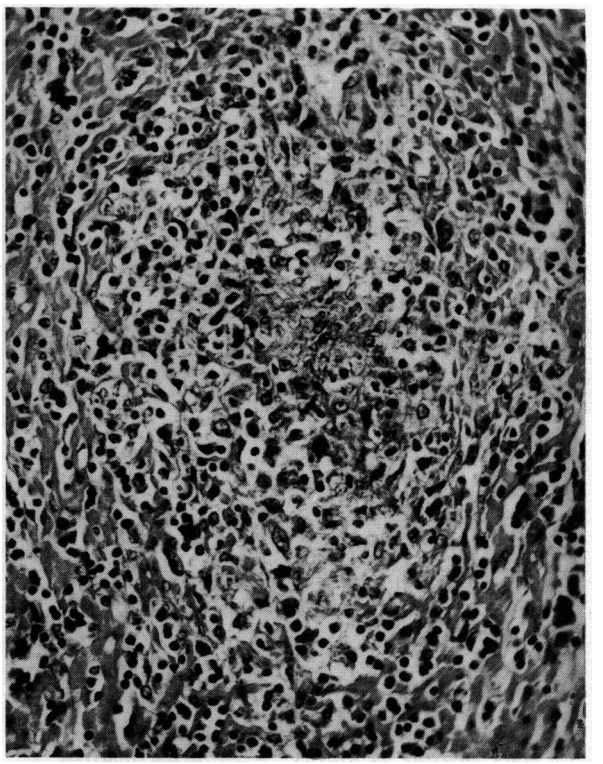

Figure 3.—Microscopic section (×150) showing a granuloma in the wall of the duodenum.

with associated enlarged lymph nodes. However, one may find sinus tracts with intraperitoneal or retroperitoneal abscesses, adhesions and tuberculous peritonitis.

SUMMARY

A case report of ulcerative tuberculosis of the second portion of the duodenum with radiographic findings is given. Radiographically the lesion simulated both neoplasm and post bulbar ulceration of the duodenum. At operation it resembled a neoplasm.

Discussion of the symptoms, physical, radiographic, surgical and pathologic features of duodenal tuberculosis is presented.

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